24586

S/137/61/000/005/040/060
A006/A106

24.1200

AUTHOR: Selisskiy, Ya. P.

TITLE: Magnetostriction, the modulus of elasticity and internal friction of some iron-base ferromagnetic solid solutions

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 5, 1961, 31, abstract 5Zh238 (V sb. "Relaksats. yavleniya v metallakh i splavakh." Moscow, Metallurgizdat, 1960, 307-315)

TEXT: The author investigated internal friction and its connection with magnetostriction and the modulus of elasticity of ordering solid solutions Fe-Al, Fe-Si and Fe-Co with a α-Fe lattice. The magnitude of internal friction is determined from resonance curves measured by the method of forced oscillations. The experimental results show that internal friction may abruptly change depending on the composition of the alloy and its heat treatment in connection with processes of atomic ordering in the investigated alloys. The given change in the internal friction is obviously caused by changing magnetostriction. The following qualitative dependence is hereby observed: changes in the composition or the heat treatment conditions of the alloy entailing higher magnetostriction, cause

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also higher internal friction and vice versa. An exception is the range of compositions with 50 to 75% Co in the Fe-Co system where a decrease of the internal friction level occurs simultaneously with an increase of magnetostriction. It is shown that the effect of a changing modulus of elasticity on the internal friction of the alloys is less than that of magnetostriction. In the majority of cases an increase of internal friction is accompanied by a slight decrease of the modulus of elasticity of the alloy.

L. G.

[Abstracter's note: Complete translation]

SELISSKIY, Ya.P.

Electric resistance in the Fe_3Al alloy during cold deformation and subsequent heat treatment. Fiz. met. i metalloved. 9 no. 4:633-635 Ap '60. (MIRA 14:5)

1. Institut pretsizionnykh splavov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Iron-aluminum alloys—Electric properties)

SELISSKIY, Ya.P.

Ordering during the low-temperature tempering of a hardened Fe_3Al alloy. Fiz. met. i metalloved. 10 no.5:714-719 N '60.
(MIRA 14:1)

1. Institut pretsizionnykh splavov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Iron-aluminum alloys—Metallography)
(Metals, Effect of temperature on)

18.1142

28557

S/137/61/000/009/040/087
A060/A101

AUTHORS: Bulycheva, Z.N., Selisskiy, Ya.P.

TITLE: Magnetostriction and some other properties of iron-aluminum alloys

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 9, 1961, 12, abstract 9Zh67 ("Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii", 1960, no. 23, 166 - 173)

TEXT: The region of compositions of Fe-Al alloys possessing the greatest values of magnetostriction was made more precise. Alloys containing 4.47-13.83% Al were investigated. Ingots of the alloys were forged into rods out of which the specimens 150 mm long and with 10 mm diameter were prepared. In order to obtain an ordered structure, the specimens were subjected to a stepwise annealing with subsequent stepwise cooling. After the heat-treatment the magnetostriction was measured, as well as the modulus of elasticity E and the saturation magnetization. The magnetostriction was measured by the method of wire tensometers in fields up to 1,500 oersteds, E by the method of longitudinal vibrations at supersonic frequencies, and the saturation magnetization by the ballistic method. In the curve of the magnetostriction saturation λ_s vs Al content in the region of

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A052/A101

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the composition Fe_3Al a sharp maximum is discovered. Here the curve is asymmetrical relative to that maximum - the fall off in the direction of higher Al contents is steeper. In the region of Fe_3Al λ_s reaches 38-40 · 10^{-6}. The value of E drops as the Al content increases, passes through a minimum in the region of Fe_3Al composition and thereupon increases again. The dependence of E and magnetostriction on the heat-treatment is investigated on four alloys of another series, the compositions of which were between the compositions of the commercial alloys "alfer" and "alfenol"., The alloys were obtained in the disordered state and in states with a high degree of ordering. The modulus of elasticity of hardened alloys drops slightly as the Al content is increased, while E of annealed alloys is raised. Heat-treatment which brings about ordering increases the λ_s by a factor of 2.5 as compared with the state with disordered structure. The kinetics of ordering in the tempering of Fe-Al-alloy was investigated by the method of electric resistivity. The variation in resistivity at tempering at 250°C does not stop even after long soaking (> 15 hrs), whereas at 300 and 350°C the process stops after a soaking of only a few minutes.

A. Russakov

[Abstracter's note: Complete translation]

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S/078/60/005/011/006/025
B015/B060

AUTHOR: Selisskiy, Ya. P.

TITLE: Constitution Diagram of Iron - Aluminum Alloys in the Region of Ordered Alloys on Iron Base

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 11, pp. 2435-2439

TEXT: In connection with data supplied by Taylor and Jones (Ref. 6) the author studied the limit of ferromagnetic transformation of the Fe-Al alloys and showed that there is no connection between these conversions and the ordering processes. Dilatometric and thermomagnetic investigations on Fe-Al alloys of various compositions (Table) were made. The dilatometric curves of heating and cooling were recorded with the aid of a differential dilatometer by Shevenar, while the Curie temperature was measured with an anisometer by Akulov. Prior to testing, the specimens were pre-treated thermally (750°, 2 h; 850°C 30 min - hardening in water). The dilatometric and thermomagnetic curves obtained for 10

specimens are reproduced in Fig. 2. In the alloy with 19.9 atom% Al the dilatometric heating curve reveals a noticeable change in volume, due to ordering and to a change in the evolution of the curve at 430°C. The dilatometric curves of all other alloys with a content of up to 30.4 atom% Al exhibit the characteristic minimum, i.e., a uniform change in volume in ordering and disordering during the heating process. The highest volume effect was found in the alloy with 24.4 atom% Al. The Curie temperature (T_c) is given as a function of the aluminum content in Fig. 3. The curve corresponding to the boundary of ferromagnetism apparently changes twice, near 22 atom% Al and near 26 atom% Al. An interaction of two cooperative phenomena is assumed to occur in the present case, viz., an interaction of the ordering of atoms and of ferromagnetism. The anomalies of magnetic saturation are connected with the beginning of the process of ordering and can be explained in accordance with the theory by Sato (Ref. 9). There are 3 figures, 1 table, and 10 references: 3 Soviet, 4 US, and 2 British.

SUBMITTED: September 10, 1959

69691
S/126/60/009/03/014/033
E111/E452

18.5110
18.1140

AUTHORS: Borodkina, M.M., Bulycheva, Z.N. and Selisskiy, Ya.P.

TITLE: Investigation of the Texture and Anisotropy of Magnetostriction of Fe-Al and Fe-Cr Alloys

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 390-399 (USSR)

ABSTRACT: Expansion in the field of ultrasonics requires increased supplies of alloys with a high magnetostriction in the polycrystalline state. At present types K65 and K50F2 iron-cobalt alloys are used but their cobalt-content makes them expensive. In the present investigation, the possibility was studied of producing a texture of the type (110)[001] and (100)[001] in Fe-Al alloys with 10 wt% Al (type Yu10) and Fe-Cr alloys with 14% Cr (type Kh14) by varying cold-rolling and final heat-treatment conditions. The anisotropy of magnetostriction after various final heat treatments was investigated as well as the texture. The alloys (Table 1 gives their compositions) were induction melted at the Experimental Works of TsNIIChM. Ingots were forged into 25 x 100 x 200 mm sheet bars at 1050 to 1100°C,

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Investigation of the Texture and Anisotropy of Magnetostriction of Fe-Al and Fe-Cr Alloys

hot rolled preheated to 1000 to 1500°C to 2.5 to 3 mm and then cold rolled to 30 to 100 microns by one of the following procedures: repeated cold rolling with reductions of 50 to 60% to 0.10 mm with several intermediate heat treatments in hydrogen at 900°C for 20 min; double cold rolling with 80 and 90% reduction with a 90 minute intermediate heating in hydrogen at 850°C; cold rolling with an overall reduction of 95.6 to 99% to the final strip without intermediate heat treatment. Texture was studied before rolling and at different stages of rolling with electrolytic polishing; an X-ray photo-method with a Laue camera was used, reflections from grains situated within an area of 69 cm^2 of irradiated surface of a strip surface being integrated during an exposure. Fig 1 shows X-ray diffraction patterns at different stages of rolling by the first variant, those for the third are shown in Fig 3. Fig 2 gives polar figures obtained with the second variant. Wire strain gauges were used for studying

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magnetostriction along, across and at 45° to direction of rolling. Fig 4 shows magnetostriction as functions of field strength for the three directions for the aluminium and chromium alloys (left and right-hand figures respectively). The authors conclude that the texture is characterized by three main orientations: (100) [011], (111) [112] and (112) [110]. There is a definite relation between orientations of the deformation and recrystallization texture; enhancement of the (111) [112] orientation leads to development after annealing of (110) [001] and (100) [001] orientations, this being attained by rolling according to the first variant; the more often the procedure is repeated the stronger the texture and the greater the magnetostriction along and across the direction of rolling; the second variant tends to enhance the (112) [110] orientation, with the development after final annealing of complex orientations not conducive to the required magneto-striction anisotropy; single rolling with a reduction

69661
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Investigation of the Texture and Anisotropy of Magnetostriction of Fe-Al and Fe-Cr Alloys

of 90 to 96% without intermediate annealing gives a pronounced (100) [011] orientation which partially survives annealing and gives maximum anisotropy at 45° to the direction of rolling; with 98 to 99% deformation single rolling enhances the (112) [110] orientation but gives after annealing complex orientations unfavourable to magnetostriction anisotropy. Only treatment of the first-variant type is satisfactory for the test alloys. There are 4 figures, 6 tables and 7 references, 2 of which are Soviet, 2 English and 3 German.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChERMET
(Institute of Precision Alloys of TsNIIChERMET)

SUBMITTED: September 16, 1959

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69704
S/126/60/009/03/030/033
E193/E483

18.7510

AUTHOR: Selisskiy, Ya.P.

TITLE: On the Stability of the Condition Resulting from Ordering Transformation in Plastically Deformed Alloy Fe_3Al

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 472-473 (USSR)

ABSTRACT: In continuation of the work on ordering of quenched Fe-Al alloys, described elsewhere (Ref 1 to 3), the present author studied this transformation in plastically deformed specimens containing 19.9, 21.3 and 24.4 at % aluminium. One series of the test pieces, 3 mm diameter, was prepared by machining from 8 mm diameter forged stock, heating to 850°C and quenching in water. The other series of test pieces, 2 mm diameter, was prepared from wire obtained by drawing the forged stock at 650 to 700°C; work-hardened condition of the wire was indicated by its increased strength and elasticity. The dilatometric heating curves, obtained with the aid of a differential dilatometer, are reproduced on p 472, curves a, B and ∂ relating to quenched specimens

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On the Stability of the Condition Resulting from Ordering Transformation in Plastically Deformed Alloy Fe_3Al

containing 19.9, 21.3 and 24.4 at % Al respectively; curves б, г and е relating to the same alloys in the work-hardened condition; the rate of heating used during dilatometric measurements was 5°/min. It will be seen that curves а, в and д have characteristic minima associated with the decrease and increase in volume caused by the ordering and disordering transformations respectively, the depth of these minima depending on the aluminium content. The character of curves for the work-hardened specimens containing 19.9 and 21.3 at % Al is quite different; the slope of these curves changes at temperature T_1, at which the ordering transformation begins, resulting in a change of the coefficient of thermal expansion. However, no disordering takes place on further heating, point T_4 is absent, and the thermal expansion coefficient increases only slightly at T_{kn} which corresponds to the critical temperature of the order-disorder transformation taking place on heating the alloy of the

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On the Stability of the Condition Resulting from Ordering Transformation in Plastically Deformed Alloy Fe_3Al

given composition. The comparatively greater length of the portion $T_1 - T_{pn}$ of curve e (for the alloy with 24.4 at % Al), indicates that the process of ordering was more complete in this case than in the case of the quenched specimen (curve ∂). This is probably due to the fact that the degree of disorder in the work-hardened specimen is higher than that in the quenched specimen, cooled at insufficiently fast rate. On the other hand, the portion $T_{pn} - T_{knl}$ of curve e is much less pronounced than the corresponding portion of curve ∂ which indicates that in the former case, the volumetric changes associated with disordering are considerably smaller. The results obtained by the present author can be explained in the following manner: the structural condition, resulting from ordering in a distorted lattice, is more stable during subsequent heating than the condition brought about by ordering the alloy with the initial structure obtained by quenching. There are 1 figure and 6 references, 5 of which are Soviet

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On the Stability of the Condition Resulting from Ordering Transformation in Plastically Deformed Alloy Fe_3Al

and 1 English.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys TsNIIChM)

SUBMITTED: September 8, 1959

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4

S/126/60/009/04/030/033
E111/E435

AUTHOR: Selisskiy, Ya.P.

TITLE: Electrical Resistance of an Fe_3Al Alloy in Cold Deformation and Subsequent Heat Treatment

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 4, pp 633-635 (USSR)

ABSTRACT: In this letter to the Editor, the author describes his investigation of the effect of the degree of cold deformation and of subsequent heat treatment on the electrical resistance of an Fe_3Al alloy. After hot rolling at 1000 to 850°C, a strip of the alloy was cut into 150 mm long blanks which were then "warm" rolled (heating to 580 to 600°C after every two or three passes) at right angles to the direction of hot rolling, to give strips 0.23 to 2.0 mm thick. After annealing for 2 hours at 850°C and slow cooling, these were then gradually cold-rolled to a thickness of 0.2 mm. 5 mm Wide strips were used for resistance measurements which were carried out by means of the potentiometric method, with contacts 100 mm apart. Curve 1 in the figure on p 634, shows resistivity as a function of the degree of cold deformation.

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Electrical Resistance of an Fe_3Al Alloy in Cold Deformation and Subsequent Heat Treatment

Resistance was measured again after annealing at 850°C for 20 minutes and quenching or cooling at 25°C per hour (Curves 2 and 3). In all cases resistivity increased up to a deformation of 34.5% and then fell. The structure of the alloys was studied by X-ray back-reflection and transmission techniques. The increase in resistivity for deformations increasing from 6.5 to 34.5% coincides with the breakdown of recrystallization textures and appearance of a cold-deformation texture. The observed resistivity changes could be due to orientation redistribution of components in the solid-solution lattice. There are 1 figure and 2 references, 1 of which is Soviet and 1 German.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys of TsNIIChM)

SUBMITTED: September 8, 1959

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85964
S/126/60/010/005/012/030
E021/E406

18 1210

AUTHOR: Selisskiy, Ya.P.

TITLE: Ordering of the Quenched Fe_3Al Alloy During Low Temperature Annealing Treatments

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5, pp.714-719

TEXT: The work was designed to determine the critical rate of cooling of the alloy Fe_3Al in order to obtain a disordered structure and to study the process of ordering at low temperatures. Alloys containing 13.9% aluminium, 0.2% manganese and silicon, 0.02% carbon, remainder iron, were hot rolled to 2 mm strip. Samples were then rolled to 1 mm thickness at 580 to 600°C, slowly cooled and cold rolled to 0.2 mm. Discs 150 x 1.5 x 0.2 mm were heated to 850°C to remove cold work and slowly cooled. The critical rate of cooling was found by an earlier method (Ref.1), by quenching in a stream of gas of high thermal capacity, after heating to the required temperature. Results showed that the disordered state obtained by heating to higher than 800°C could be retained at room temperature by quenching at a rate of 10000°C/sec. After a sufficiently long period at 250°C, the electrical

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85954

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E021/E406

Ordering of the Quenched Fe_3Al Alloy During Low Temperature Annealing Treatments

resistance of the sample was the same as that of the more slowly cooled sample (25°C/sec). Changes in volume of the specimens during the various heat treatments were followed by dilatometric methods. A change in volume of the sample held at 250°C did not take place as fully as in the sample after slow cooling. It is proposed that the change in volume was connected, in the main, with the emergence of short-range order. The electrical resistance - time curves at low annealing temperatures followed the usual paths of alloys in which ordering was taking place and no anomalies were observed after short annealing times. There are 4 figures, 2 tables and 6 references: 4 Soviet and 2 Non-Soviet.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys TsNIIChM)

SUBMITTED: March 26, 1960

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S/126/60/010/006/005/022
E193/E483

AUTHOR: Selisskiy, Ya.P.

TITLE: Anomalous Variation of Electrical Resistance During Low-Temperature Annealing of Cold-Worked Alloy Fe_3Al

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.6, pp.829-834

TEXT: It has been established by Thomas (Ref.1) that the electrical resistance R of iron-aluminium alloys, containing 10 to 20 atom % Al, decreases after cold deformation and increases during subsequent annealing. Similar anomalous effects, attributed to the specific structural state associated with a change in the electron structure of these alloys, have been observed in quenched, and subsequently annealed, specimens. At the same time, R of the alloy of the stoichiometric composition Fe_3Al, quenched and subsequently annealed at low temperatures, has been found to vary in a normal manner. It can be postulated that if quenched Fe_3Al alloy is characterized by a specific structural state, its effect on the variation of the electrical resistance during low-temperature annealing can be masked by the effect of the

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Anomalous Variation of Electrical Resistance During Low-Temperature Annealing of Cold-Worked Alloy Fe_3Al

establishment of long-range order in the alloy. It was in order to check this hypothesis that the investigation, described in the present paper, was undertaken. The experimental alloys, containing 25 and 15.8 atom % Al, were prepared by induction melting from Armco iron and high-purity aluminium, the impurities present being less than 0.2% Mn and Si, and less than 0.02% C. By a suitable choice of the hot-, warm- and cold-rolling schedules, a series of specimens, cold-worked to 6.5 to 88.8% deformation, was obtained. These were used to study the variation of R of the alloys as a function of the degree of deformation and duration of annealing at 200 and 250°C. R of the Fe_3Al alloy increased slightly with increasing degree of cold deformation, reached a maximum at 34.5% deformation and then decreased again; the maximum decrease $\Delta R/R$ (related to the value of R corresponding to 34.5% deformation) attained being 21%. The variation of $\Delta R/R$ of cold-worked alloy Fe_3Al during low-temperature annealing was also anomalous in that $\Delta R/R$ increased with increasing

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Anomalous Variation of Electrical Resistance During Low-Temperature Annealing of Cold-Worked Alloy Fe_3Al

duration of annealing, reached a maximum and then gradually decreased. When the annealing operation was carried out at 250°C, the maximum $\Delta R/R = 23\%$ was attained after 1.5 min; in the case of specimens annealed at 200°C, the maximum $\Delta R/R = 21\%$ was reached after 11 min. These results proved conclusively that anomalous variation of R of cold-worked and subsequently annealed specimens is not confined to a narrow range of composition of the Fe-Al system but is a characteristic common to all those alloys of this system that can be subjected to cold deformation. The increase in R during the first stages of low-temperature annealing can be attributed to a diffusion process brought about by a non-homogeneous field of stresses, set up during cold deformation. The electrical resistivity of the alloy can be affected not only by the concentration non-homogeneity (Cottrell atmospheres) resultant from this diffusion process, but also by the establishment of the short-range order causing a change in the electron structure and a reduction in the number of the conductivity electrons. There are

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Anomalous Variation of Electrical Resistance During Low-Temperature Annealing of Cold-Worked Alloy Fe_3Al

4 figures, 1 table and 10 references: 4 Soviet and 6 non-Soviet (2 of which are translated into Russian).

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys TsNIIChM)

SUBMITTED: March 26, 1960

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18.8100 1418 1413 1645 S/126/61/011/001/001/019
24.7700 1110 1482 1138 E193/E483

AUTHORS: Artsishevskiy, M.A. and Selisskiy, Ya.P.

TITLE: The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.1, pp.20-28

TEXT: The current views regarding the effect of neutron radiation on properties of alloys that undergo order/disorder transformations are based mainly on conclusions inferred from the results of studies of Au-Cu alloys of composition corresponding to Cu_3Au. Little work has been done on alloys of this type which have industrial applications, and it was for this reason that the present investigation was undertaken. The composition (weight %) of the alloys studied by the present authors is tabulated below

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The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

	Ni	Mn	Cr	Al	Mo	Fe
Ni_3Fe	85.1	-	-	-	-	Remainder
Ni_3Mn	75.7	23.6	-	-	-	-
Ni_3Cr	76.72	-	22.65	-	-	-
Fe_3Al	-	-	-	14.88	-	Remainder
50H	51.7	-	-	-	-	Remainder
Mo-permalloy	76.0	-	-	-	2.8	Remainder

Admixtures: C - 0.01 - 0.03%; Si - 0.15 - 0.4%; Mn - 0.1 - 0.5%.

The magnetic properties were measured on toroid specimens (O.D. = 30 mm; I.D. = 20 mm; δ = 0.35 mm) and on rods 25 mm long and 3 mm in diameter; specimens for measuring the electrical resistivity were cut from foil 50 micron thick. The experiments

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The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

were conducted on specimens in annealed (i.e. ordered), quenched (i.e. disordered) and work-hardened condition. The vacuum annealing treatment of the Ni_3Fe, Ni_3Mn, Ni_3Cr, 50H and molybdenum permalloy consisted in the following: 3 h at 1000°C, furnace cooling to 550°C, cooling to 250°C at 1°C/h, furnace cooling to room temperature. The Fe_3Al alloy was heated in vacuum to 700°C, held at the temperature for 1 h, heated to 800°C and held at the temperature for 10 min, after which it was furnace-cooled to 550°C, then cooled to 220°C at 25°C/h and, finally, furnace-cooled to room temperature. The disordered specimens were obtained by oil-quenching the Fe_3Al alloy from 800°C and the other alloys from 1000°C. The work-hardened specimens were obtained by 65% (toroids) or 90% (foil) plastic deformation in compression. The electrical resistance at 83 to 293°K (20 to 293°K in the case of alloy Ni_3Mn) of specimens before and after neutron bombardment was determined by the potentiometric method. The magnetic properties of Ni_3Fe, 50H, Fe_3Al and molybdenum permalloy were measured at room

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temperature with the aid of the ballistic method. The measurements were made with d.c. The magnetization curve was plotted; the initial and maximum permeability, μ_o and μ_{max}, respectively, were measured as well as the coercive force H_c, residual induction B_r, and the induction in a 50 Oe field, B_{50}. Neutron irradiation was carried out at 60°C (with an integrated dose of 5×10^{16} or $5,5 \times 10^{17}$ neutrons/cm^2) and at 350°C (integrated dose of 4×10^{18} neutrons/cm^2). Some of the typical results are reproduced graphically. Thus, the relative change of electrical resistivity of annealed Ni_3Mn specimens during ageing at 350°C is illustrated in Fig.2, where $(R_o - R_\tau)/R_o$ (in %) is plotted against time (τ, hours) of ageing; here, R_o is the initial resistivity, R_τ denoting the resistivity after time τ; experimental points marked by circles and crosses relate, respectively, to specimens that had, and had not, been irradiated prior to ageing. The temperature dependence of electrical resistivity of Fe_3Al is illustrated in Fig.3, where $(R_{20} - R_t)/R_{20}$ is plotted against the

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The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

test temperature (°C); here, R_{20} and R_t denote the resistivity at 20°C and at the test temperature t respectively; the graphs relate to specimens in the following condition: 1 - annealed and irradiated; 2 - quenched and irradiated; 3 - annealed, not irradiated; 4 - quenched, not irradiated; 5 - work-hardened, not irradiated. The same relationship for the Ni_3Mn alloy is illustrated in Fig.4, which contains graphs relating to specimens in the following condition: 1 - annealed and irradiated; 2 - annealed, not irradiated; 3 - quenched and irradiated; 4 - quenched, not irradiated; 5 - work-hardened, not irradiated. Analysis of these and all the other results obtained led the present authors to the following conclusions: (1) Neutron irradiation brings about an increase in the rate of diffusion in all the alloys studied; this effect is particularly noticeable after irradiation at 60°C, at which temperature thermally-induced diffusion is practically non-existent in these materials. The accelerated rate of diffusion is probably associated with non-equilibrium concentration of Fraenkel

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The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

defects formed during irradiation. Irradiation at 60°C affects the course of subsequent ageing (at 200°C) of quenched and annealed specimens of the NiCr, Ni_3Fe and Ni_3Mn alloys in which the rate of the thermally-induced diffusion at this temperature is very slow. This effect can be attributed to the higher vacancy content existing during and after irradiation; this accelerates diffusion during subsequent ageing but only in the initial stage of the process (cf Fig.2), after which the rate of ordering attains the level characteristic for this particular temperature.
(2) On the basis of electrical resistance measurements, it can be postulated that accelerated diffusion, caused by neutron bombardment, brings the material treated nearer to the state of equilibrium. In some cases, such a state cannot be attained by heat treatment, owing to the slow rates of diffusion at low temperatures. (3) Changes in R and $4\pi I$ of annealed (ordered) alloy Ni_3Mn, brought about by neutron bombardment, (integrated dose of 4×10^{18} neutrons/cm^2) correspond to an increase in the degree of

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The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

order, whereas neutron bombardment of quenched (disordered) alloy Ni_3Mn brings about a 50% decrease in R and a very small increase in $4\pi I$ which, after bombardment, amounts only to 5% of that of an ordered specimen. This may be due to the fact that in the case of a disordered alloy, the degree of short-range order only is increased by neutron bombardment. In an annealed specimen in which domains of long-range order exist already before neutron bombardment, neutron irradiation may cause both an increase in the degree of order in these domains and their growth. It is very likely that R depends to a large extent on the degree of short-range order, whereas $4\pi I$ is determined mainly by the degree of long-range order. (4) Comparison of the effects of neutron bombardment at 60°C (integrated dose of 4×10^{16} neutrons/cm^2) on various properties of the alloys studied shows that the magnetic properties are more sensitive to neutron irradiation than the electrical ones. It is most likely that the change in the magnetic properties is brought about not by a change in the degree of order but by radiation

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E193/E483

The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

defects whose concentration must be relatively large, since the change in magnetic properties persists for long periods after irradiation. In experiments carried out at 350°C the effect of neutron bombardment on the magnetic properties was obliterated by the effect of temperature, owing to which the concentration of residual radiation defects was low. It was only in the case of annealed alloys Ni_3Fe and Ni_3Mn (in which the degree of order was considerably increased by neutron bombardment) that a considerable change in the magnetic properties was observed, H_c of Ni_3Fe having been doubled and $4\pi I$ of Ni_3Mn having increased by 13%. (5) Whilst according to published results (Ref.7), R of annealed Fe_3Al, subjected to deuteron radiation increases, it decreases after neutron bombardment. There are 4 figures, 3 tables and 12 references: 6 Soviet and 6 non-Soviet.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys, TsNIIChM)

SUBMITTED: April 8, 1960
Card 8/10

S/126/61/011/001/001/019
E193/E483

The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

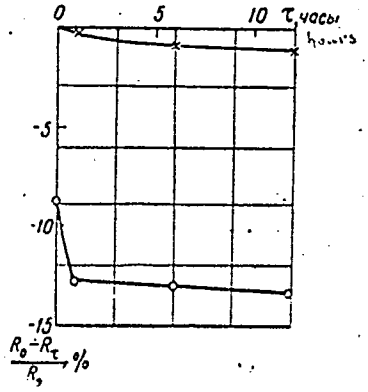

Fig.2.

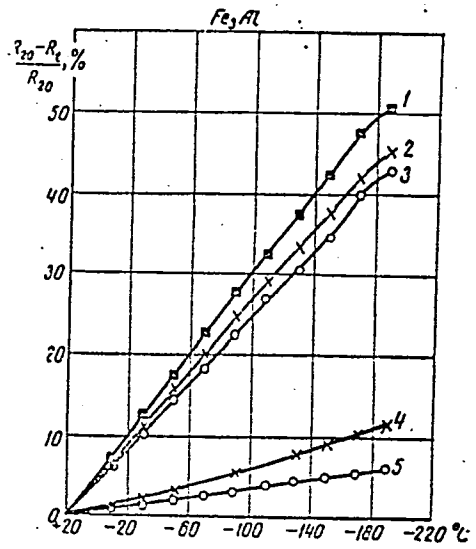

FIG. 3

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E193/E483

The Effect of Neutron Bombardment on the Electrical and Magnetic Properties of Alloys Undergoing Disorder/Order Transformations

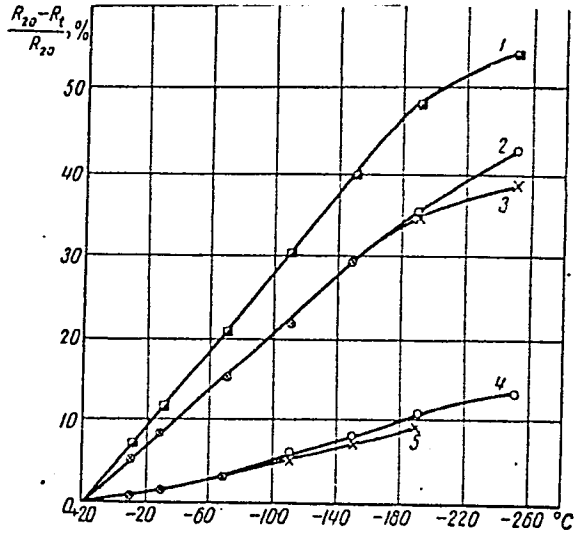

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Fig.4.

S/126/61/011/001/013/019
E193/E483

18.7100 1454

AUTHOR: Selisskiy, Ya.P.

TITLE: Increase in Strength of the Fe_3Al Alloy During Ordering

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.1, pp.128-131

TEXT: In view of the contradictory results obtained by Sykes and Bampfilde (Ref.1) on one hand and Kayser (Ref.2) on the other, the present author re-investigated the problem of the effect of ordering on the mechanical properties of Fe-Al Alloys. Two alloys were studied: one containing 24.8 at.% Al with a sharply defined superlattice in the ordered state and the other containing 15.8 at% Al which shows no evidence of long-range order. The experimental specimens, obtained by cold-rolling to 80% reduction in thickness, were subjected to the following heat treatments:
I 30 min at 850°C + furnace cooling to 700°C + 3 h at 700°C + water quenching; II 30 min at 850°C + furnace cooling to 700°C + 1 h at 700°C + cooling to room temperature at 25°C/h;
III 30 min at 850°C + furnace cooling to 700°C + 1 h at 700°C + cooling to 450°C at 25°C/h + water quenching. Treatment I produced material in the disordered state, the fully ordered and

S/126/61/011/001/013/019
E193/E483

Increase in Strength of the Fe_3Al Alloy During Ordering

partly-ordered state having been produced by treatments II and III respectively. The results of tensile tests showed only a slight increase in U.T.S. (from 62.8 to 66.6 kg/mm^2) in the ordered 24.8 at.% Al alloy; the properties of the 14.8 at.% Al alloy were practically the same for each of the treatments employed. In the next series of experiments, the effect of ageing at 200°C on the yield point, U.T.S. and hardness of cold-worked (80% reduction) 24.8 at.% Al alloy was studied. The results are given in Fig.1 and 2. In Fig.1, the relative increase $\Delta\sigma/\sigma$ of the properties studied is plotted against time (τ, hours) of ageing at 200°C, circles and dots relating to the yield point and U.T.S. respectively. In Fig.2, the relative increase in hardness $\Delta H/H_w$ is plotted against ageing time at temperatures shown by each curve. It was concluded that whereas the disorder-order transformation of the Fe_3Al alloy brings about only an insignificant increase in its strength, the U.T.S. of this alloy can be increased by as much as 45% by low temperature (200°C) ageing of cold-worked material. (After 1 h at 200°C, the U.T.S. increased from 81 to 116 kg/mm^2;

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S/126/61/011/001/013/019
E193/E483

Increase in Strength of the Fe_3Al Alloy During Ordering

after 8 h at 200°C, the Brinell hardness increased from 311 to 402). This effect is probably associated with the critical size of the antiphase domains and it is postulated that the observed increase in strength may be also due to concentration of non-homogeneities which slow down the movement of dislocations. There are 2 figures, 2 tables and 11 references: 2 Soviet and 9 non-Soviet.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys, TsNIIChM)

SUBMITTED: March 26, 1960

Card 3/4

89946

S/126/61/011/001/013/019
E193/E483

Increase in Strength of the Fe_3Al Alloy During Ordering

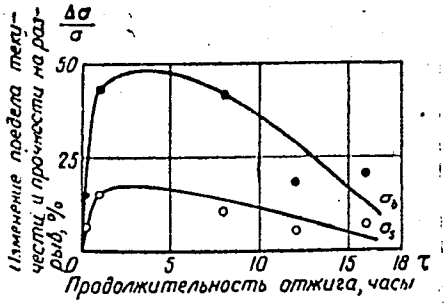

Рис. 1. Относительное изменение предела текучести и прочности, на разрыв холоднодеформированного сплава с 24,8 ат. % Al в зависимости от продолжительности последеформационного отжига при 200°. Показано изменение, выраженное в процентах исходной величины для холоднодеформированного состояния.

Fig.1.

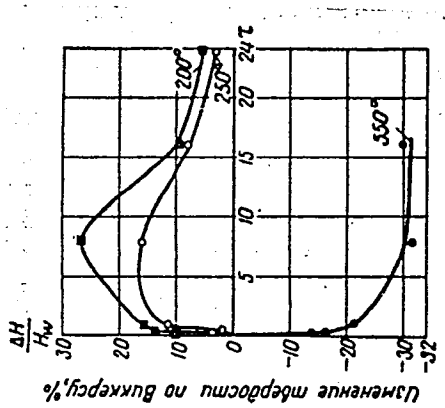

Рис. 2. Относительное изменение твердости холоднодеформированного сплава с 24,4 ат. % Al в зависимости от продолжительности последеформационного отжига при 200, 250 и 550°. Показано изменение, выраженное в процентах исходной величины для холоднодеформированного состояния.

Fig.2.

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41519

S/126/62/014/003/009/022
E111/E435

AUTHOR: Selisskiy, Ya.P.

TITLE: Strengthening of ordering cold-deformed Ni-Cr alloys during low-temperature annealing

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.3, 1962, 406-413

TEXT: Strengthening during ordering was investigated for nickel-based Ni-Cr alloys (19.5 to 34.7 at.% Cr) in which a Ni_2Cr-type ordered structure was to be expected under suitable conditions. Tensile strength was measured after 97% cold deformation and annealing at 250 to 700°C. After annealing at 500°C for 15 minutes to 256 hours, the electrical resistance was measured and an X-ray diffraction investigation carried out on the alloys with 32.5 and 33.2% Cr, and the recrystallization threshold was determined for the alloys with 24.6 and 33.2% Cr. Annealing below the recrystallization threshold led to higher strength for all the test alloys, alloys with over 24.6% Cr having two maxima on the strength vs annealing temperature curves. At low annealing temperatures the additional strengthening due to appearance of close order predominates, whilst at higher temperatures that due to

Card 1/2

growth of anti-phase domains and their attainment of critical dimensions comes into play. In compositions close to the two-phase boundary the situation is complicated by strengthening due to alpha-phase separation. The additional strengthening decreases with increasing chromium contents: at compositions approximating to Ni_2Cr it can be assumed that close order is retained even after cold deformation. The increase with rising chromium content in the extent to which loss of strength occurs on recrystallization, with anomalies at Ni_2Cr and Ni_3Cr compositions, is explained by changes in anti-phase domain dimensions. The Ni_3Cr-composition anomalies require further investigation. There are 3 figures.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys TsNIIChM)

SUBMITTED: October 14, 1961

S/137/62/000/006/118/163
A052/A101

AUTHORS: Bulycheva, Z. N., Gurvich, Ye. I., Selisskiy, Ya. P.

TITLE: Magnetic alloys used in ultrasonic engineering

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 53, abstract 6I314 (V sb. "Primeneniye ul'trazvuka v prom-sti". Moscow, Mashgiz, 1959, 91 - 101)

TEXT: Magnetostrictive and other characteristics of some alloys of practical importance in the production of vibrators are considered. Such materials are pure Ni, Fe-Al alloy with 13.8% Al [Ю 14 (Yu14)], Fe-Co alloys with 65 and 50% Co. Yu14 alloy gains the necessary magnetic properties after a heat treatment in two variants depending on the available equipment: 1) heating to 750°C and 1 hour holding with a subsequent cooling to 250°C and then with the switched off furnace; 2) heating to 750°C and 1 hour holding with a subsequent quick furnace or air cooling, then 2 - 3 hour tempering at 250 - 300°C follows. Yu14 alloy has a fair heat resistance, therefore no special protective media are needed for its heat treatment. After heating to 750°C the surface of plates is just

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S/137/62/000/006/118/163
A052/A101

Magnetic alloys used in ultrasonic engineering

covered with a thin oxide layer which does not interfere with the assembly of plates in the magnetostriction vibrator pack. Characteristic of the alloy with 50% Co and to a lesser degree of K49Ф2 (K49F2) alloy containing 49% Co and 1.5 - 1.8% V is an increased brittleness after annealing, caused by the formation of an ordered atomic structure. This brittleness is partly eliminated by hardening. K49F2 alloy gains the necessary magnetic properties only after annealing with a subsequent slow cooling. The advantages of K 65 (K65) alloy as compared with K49F2 and Yu14 alloy are a high value of magnetostriction, no brittleness and good machinability; its shortcomings are higher remagnetization losses and high costs. Yu14 alloy will be in the years to come the material of mass application in magnetostriction vibrators for ultrasonic engineering.

T. Rumyantseva

[Abstracter's note: Complete translation]

Card 2/2

S/126/62/013/004/014/022
E111/E435

AUTHORS: Selisskiy, Ya.P., Tolochko, M.N.

TITLE: Contribution on the recrystallization of ordering iron-cobalt alloys

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.4, 1962, 587-590

TEXT: One of the authors (Selisskiy et al: FMM, v.7, no.2, 1959, 214; Izv. AN SSSR, v.23, no.5, 1959, 640) has previously studied, by X-ray analysis, the recrystallization of ordering Fe-Co alloys at temperatures close to their Kurnakov points. The investigation is now continued to higher temperatures, using alloys with 35.6, 43.0, 50.75 and 65.35% Co and metallographic methods. Grain growth was followed by the method of random-intercepts. The work showed that in agreement with their previous results, the 50% alloy has the highest temperature for the start of recrystallization and this is close to the order-disorder transition temperature. Collective recrystallization was observed on heating to temperatures above the corresponding transition temperatures, up to the alpha-gamma transformation boundary. The 50% Co alloy

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Contribution on the ...

retains a smaller grain size than the others, although its specific grain surface falls more sharply in the first 16 hours tempering. The relatively sharper fall in grain growth rate in the 50% Co alloy is due to thermodynamic instability produced by its higher surface free-energy immediately after transition into the disordered state. There are 2 figures and 2 tables.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChM
(Institute of Precision Alloys TsNIIChM)

SUBMITTED: August 15, 1961

Card 2/2

DZHAVADOV, D.M.; SELISSKIY, Ya.P.

Kinetics and some regularities of the variation in electric resistance in the ordering of ternary solid solutions of iron-cobalt-vanadium. Ukr. fiz. zhur. 8 no.2:179-183 F '63. (MIRA 16:2)

1. Institut pretsizionnykh splavov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii, Moskva.
(Iron-cobalt-vanadium alloys—Electric properties)

GOL'DENBERG, A.A.; SELISSKIY, Ya.P.

Ordering processes and activation energy of the recrystallization of iron-cobalt alloys. Ukr. fiz. zhur. 8 no.2:216-218 F '63. (MIRA 16:2)

1. Vsesoyuznyy zaochnyy mashinostroitel'nyy institut i TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii, Moskva.
(Crystallization) (Iron-cobalt alloys)

S/185/63/008/002/002/012
D234/D308

AUTHORS: Dzhavadov, D. M. and Selisskiy, Ya. P.

TITLE: Kinetics and some regularities of the variation of electrical conductivity during the ordering

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 179-182

TEXT: An Fe-Co alloy and seven V-containing alloys based on Fe-Co were investigated. Results of resistance measurements are given and discussed. Conclusions: the anomalous variation of the resistance after annealing cold deformed alloys begins already with small concentrations of V. The dependence of the variation on temperature and duration of annealing indicates two causes: 1) additional scattering of conduction electrons by concentration inhomogeneities due to diffusion of atoms in an inhomogeneous stress field, 2) additional scattering of conduction electrons by the boundaries of domains of the ordered structure, the surface of these boundaries increasing with the concentration of V. More de-

Kinetics and some ...

finite conclusions cannot as yet be made. If the V concentration exceeds 1% the variation of resistance is also due to two-phase decay. There are 2 figures.

ASSOCIATION: TsNIIChM, institut pretsizionnykh splavov (TsNIIChM, Institute of Precision Alloys), Moscow

Card 2/2

S/185/63/008/002/006/012
D234/D308

AUTHORS: Gol'denberg, A. A. and Selisskiy, Ya. P.

TITLE: Ordering processes and activation energy of recrystallization of iron-cobalt alloys

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 216-218

TEXT: The authors investigated 8 alloys containing 0, 19, 34, 43, 53, 60, 65 and 77 at.% Co. Dependences of the time of beginning of the recrystallization on the inverse absolute temperature were plotted, and the activation energy Q was determined from them. Conclusions: ordering processes affect Q essentially above Kurnakov's point. Q is largest for alloys in which superstructure is observed. For an alloy with 50 at.% Co, Q = 98 kcal/g.atom; for those with 35 and 77% Co, Q = 51 and 57 kcal/g.atom respectively. The high values of Q are probably due to limitations of diffusion processes during annealing, connected with the existence of short-range order above Kurnakov's point. There is 1 figure.

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Ordering processes and ...

S/185/63/008/002/006/012
D234/D308

ASSOCIATION: Vsesoyuznyy zaochnyy mashinostroitel'nyy institut (All-Union External Institute of Machine Construction), TsNIIChM, Moscow

Card 2/2

L 12481-63 EWT(1)/EWP(q)/EWT(m)/BDS/ES(s)-2 AFFTC/ASD/SSD Pt-4 JD
S/185/63/008/003/001/009

67

AUTHOR: Sandomirskaya, V. L. and Selisskiy, Ya. P.

TITLE: Changes in elasticity, magnetostriction and electrical resistance of iron-aluminum alloys during ordering

PERIODICAL: Ukrains'kyy Fizychnyy Zhurnal, v. 8, no. 3, 1963, 284-288.

TEXT: It is shown that in alloys, which contain 8 - 16% by weight of Al, the change in electrical resistance and in magnetostriction is as expected for ordered alloys. The change in Young's modulus is anomalous in comparison with other ordered alloys during similar thermal treatment. The alloys were made in open induction furnace and cast into 5 kg ingots which were further forged into rods 5 mm in diameter. Resistance was measured potentiometrically across a distance of 100 mm between the potentiometer contacts. Young's modulus was measured by the resonance method of forced longitudinal vibrations of ultrasonic frequency. The article contains 2 graphs and a 12-item bibliography.

ASSOCIATION: TsNIIChM (Central Scientific Research Institute of Ferrous Metallurgy and Institute of Precision Alloys, Moscow.)

Card 1/1

SELISSKIY, Ya.P.; TOLOCHKO, M.N.

Recrystallization of ordered iron-cobalt alloys. Fiz. met. i metalloved. 13 no.4:587-590 Ap '62. (MIRA 16:5)

1. Institut pretsizionnykh splavov TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Iron-cobalt alloys--Metallography)
(Crystallization)

L 12479-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/HW-2

S/185/63/008/003/003/009

AUTHOR: Selisskiy, Ya. P.

TITLE: Strengthening of nickel base alloys during ordering.

PERIODICAL: Ukrains'kyy Fizychnyy Zhurnal, v. 8, no. 3, 1963, 347-354.

TEXT: There is a large amount of experimental evidence which indicates that ordering alloys may be strengthened during thermal treatment. This strengthening occurs most pronouncedly when alloys are annealed after cold deformation below the recrystallization threshold. The changes in strength and in electrical resistance during annealing of varying duration below the recrystallization temperature were investigated simultaneously on wire samples of binary alloys Ni_3Co and Ni-Cr as well as on ternary alloys Ni_3F, Ni_3Cu and Ni_3Fe-Ni_3Mn. In all investigated alloys, except Ni_3Co, a jump in strength was observed during the first stages of annealing. This was followed by further rise of strength in alloys containing Mn and by decrease in strength in alloys containing Cu. In Ni-Cr alloys there was a second maximum associated with phase disintegration. The article contains 5 figures and a 9 item bibliography.

Association: Central Scientific Research Institute of Ferrous Metallurgy and Institute of Precision Alloys, Moscow.

Card 1/1

DZHAVADOV, D.M.; SELISSKIY, Ya.P.

Certain regularities in changes of electrical resistance of low-alloy iron-cobalt alpha-solid solutions during heat treatment. Part 1: Iron-cobalt alloy with an addition of vandadium. Fiz. met.i metalloved. 15 no.4:504-510 Ap '63. (MIRA 16:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P.Bardina.
(Iron-cobalt alloys--Electric properties) (Vanadium)

DZHAVADOV, D.M.; SELISSKIY, Ya.P.

Certain regularities of the changes in electrical resistance of slightly alloyed γ-solid solutions of iron and cobalt during heat treatment. Report No.2: The Alloys of FeCo and Fe+ 65 percent Co with an addition of vanadium. Fiz.met. i metalloved 18 no.5:790 N '64. (MIRA 18 4)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P.Bardina.

SELISSKIY, Ya.P.

Hardening of metal powders for X-ray diffraction analysis.
Zav. lab. 31 no. 12:1476-1480 '65 (MIRA 19:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni Bardina.

SELITRENNIK, B. I.

SELITRENNIK, B. I. - i. o. Inzhenera. i VYDREVICH, A. M. Kand. Tekhn. Nauk. Leningradskiy nauchno-issledovatel'skiy institut. Akademii kommunal'nogo Khozyaystva im. K. D. Pamfilova.

Tsvetnyye fasadnyye izvestkovo-pylevidnoknartsevyye plity. Page 96

SO: Collection of Annotations of Scientific Research Work on Construction, completed in 1950, Moscow, 1951

SELITRENNIKOV, A I

SN/5
635.19
.8

ISPOL'ZOVANIYE TORFA V SEL'SKOM KHOZYAYSTVE (USE OF PEAT IN AGRICULTURE, BY) A.I. SELITRENNIKOV, F.A. MALYSHEV (i) A.P. PIDOPLICHKO. MINSK, IZD-VO AKADEMII NAUK BSSR, 1954.

29 P. ILLUS., TABLES.

SELITRANIKAU, A.I., kandydat tekhnichnykh navuk.

Studying the processes of cutting somewhat decomposed peat deposits. Vestsi AN BSSR Ser.fiz.-tekh.nav. no.1:103-110 '56. (MLRA 9:10)
(Peat)

SELITRENNIKOV, A.I., kandidat tekhnicheskikh nauk.

Using ULK-1 cultivator in breaking up the surface of peat deposit for winning peat for litter. Trudy Inst.torf.AN BSSR 5:106-117 '56. (MLRA 9:12)

(Peat machinery) (Cultivators) (Litter (Bedding))

SELITRENNIKOV, A.I.

Industrial use of slightly decomposed peat. Dokl. AN BSSR 1 no.2: 29-32 Jl '57. (MIRA 11:3)

1. Predstavleno akademikom AN BSSR A.V. Lykovym.
(Peat industry)

MALYSHEV, F.A.; TISHKOVICH, A.V.; SELITRENNIKOV, A.I.; KULIKOVSKIY, A.A.; GALENCHIK, I.Z.

Winning of peat for agricultural purposes. Trudy inst. torf. AN BSSR 8:50-66 '59. (MIRA 13:12)
(Peat industry) (Fertilizers and manures)

SELITRENNIKOV, A.I.

Technological characteristics of the operation of some machines and instruments in the preparation of a top layer of litter beddings. Trudy inst. torf. AN BSSR 8:260-269 '59. (MIRA 13:12)
(Peat soils)

SELITRENNIKOV, A.I., kand. tekhn. nauk

Operation of the ULK-2 harvesting machine used in winning peat litter. Torf. prom. 36 no.5:14-16 '59. (MIRA 13:1)

1. Institut torfa AN BSSR.
(Peat machinery)

KULIKOVSKIY, A.A.; SELIT ERNIKOV, A.I.

Complete mechanization of the winning of peat litter and development of the production of peat litter in White Russia. Trudy Inst. torf. AN BSSR 9:204-210 '60. (MIRA 14:2)
(White Russia--Peat)

GORBUTOVICH, G.D., red.; OFEYKO, F.A., red.; RAKOVSKIY, V.Ye., red.; SELITRENNIKOV, A.I., red.; SHIMANSKIY, V.S., red. KOLOTUSHKIN, V.I., red.

[Overall utilization of peat] Kompleksnoe ispol'zovanie torfa. Moskva, Nedra, 1965. 287 p. (MIRA 18:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut torfa.

SELITRENNIKOV, G.,

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(Zhukovskii, G.R.) (Meteorology, Maritime)

SELITRENNIKOVA, M.B.; SHAKHURINA, Ye.A.

Setting up a system for garbage disposal fields in the hot climate of Uzbekistan. Gig.i san. no.7:17-19 Jl '53. (MLRA 6:7)

1. Uzbekskiy nauchno-issledovatel'skiy sanitarnyy institut. (Uzbekistan--Refuse and refuse disposal) (Refuse and refuse disposal--Uzbekistan)

ZAKHIDOV, A.Z.; KURENNOVA, A.M.; SELITRENNIKOVA, M.B.

Experience in planning a protective zone for a water conduit fed by sub-channel waters in the Uzbek S.S.R. Gig.i san. no.11:16-18 N '53. (MLRA 6:10)

1. Uzbekskiy nauchno-issledovatel'skiy sanitarno-gigiyenicheskiy institut.
(Uzbekistan--Water supply)

SELITRENNIKOVA, M.B.

Decontamination of refuse from dwellings in Uzbekistan by composting. Gig.i san. no.1:12-15 Ja '54. (MLRA 6:12)

1. Iz Uzbekskogo nauchno-issledovatel'skogo sanitarnogo instituta. (Uzbekistan--Refuse and refuse disposal) (Refuse and refuse disposal--Uzbekistan)

SELITRENNIKOVA, V. B., ILYINSKIY, I. I., ZAKHIDOV, A. Z., KUPRIYANOVA, A. M.

"Drinking water supply of rural localities of Uzbekistan."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists and Infectionists, 1959.

SELITHRENNIKOVA, M. E., [illegible], YE. A., [illegible]OV, K. S., [illegible]LOVA, K. A., [illegible]VA, [illegible]

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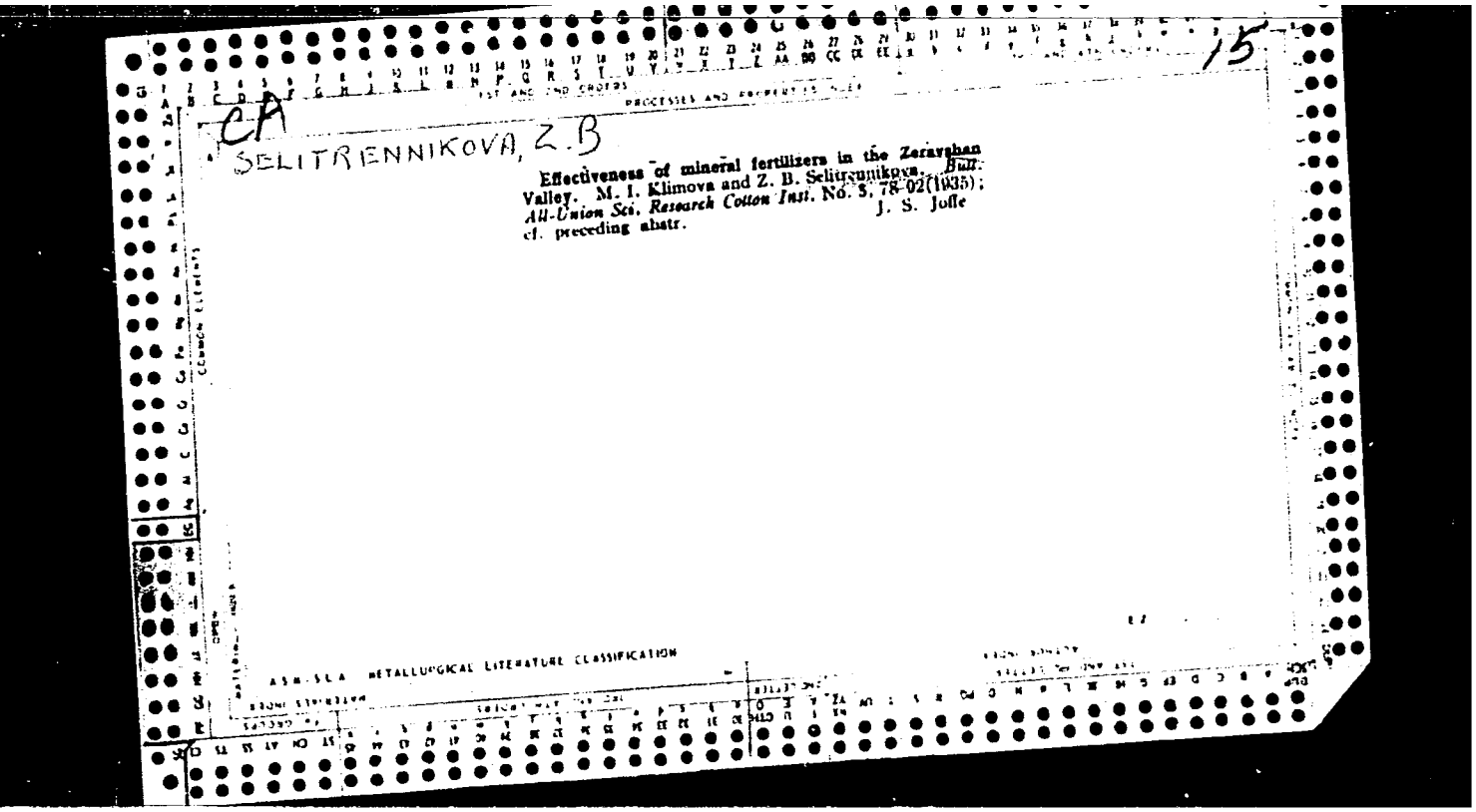
ZAKHIDOV, A.Z., dotsent; SELITRENNIKOVA, M.B., kand.biologicheskikh nauk; KOBLOVA, N.A., kand.biologicheskikh nauk

K.S.Zairov's monograph "Sanitary conditions in soil disinfection and the utilization of certain wastes in Uzbekistan". Reviewed by A.Z.Zakhidov, M.B.Selitrennikov, N.A.Koblova. Med.zhur. Uzb. no.9: 67-69 S '61. (MIRA 15:2)

(UZBEKISTAN--SOIL DISINFECTION)
(ZAIROV, K.S.)



CA

SELITRENNIKOVA, Z.B

Effectiveness of mineral fertilizers in the Zeravshan Valley. M. I. Klimova and Z. B. Selitrennikova. *Bull. All-Union Sci. Research Cotton Inst.* No. 5, 78-92(1935); cf. preceding abstr. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SELITRENNIKOVA, Z. B.

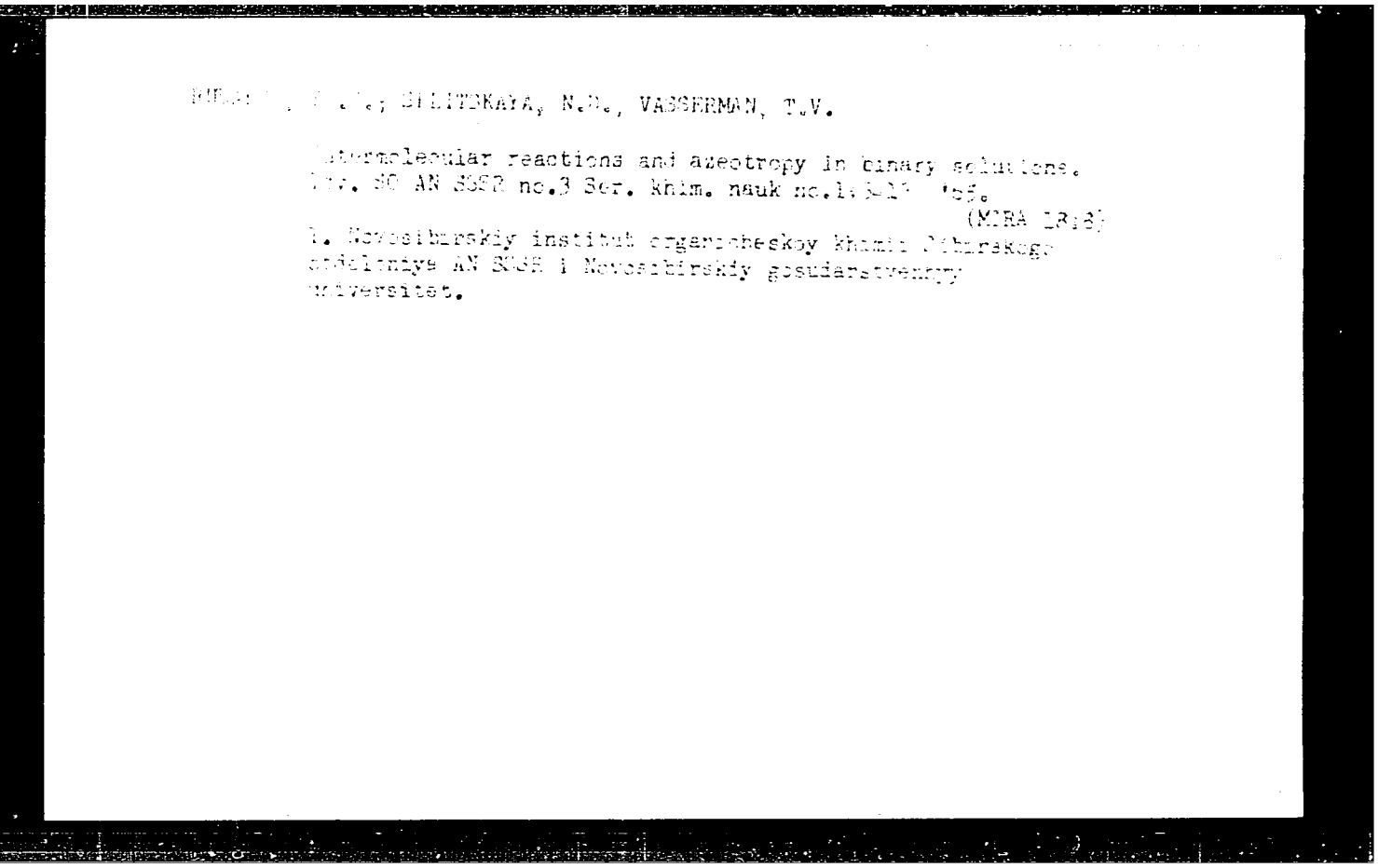
"Takyr Soils of Abandoned Lands of the Ancient Oasis on the Right Bank of the Amu-Dar'ya River within the Boundaries of the Kara-Kalpak ASSR (Kyrk-Kyz Area), and the Attempt at Their Cultivation." Min Higher Education USSR, Tashkent Agricultural Academy imeni K. A. Timiryazev, Moscow, 1955. (Dissertation for the Degree of Candidate of Agricultural Sciences)

SO: M-972, 20 Feb 56

BERDINSKIY, I.S.; Prinimali uchastiye: TIKHONOVA, G.; SELITSEV, B.N.

Substituted hydrazides of hydroxycarboxylic acids.
Part 7: o-Tolylhydrazides of diaralkylglycolic acids.
Zhur.ob.khim. 32 no.11:3805-3807 N '62. (MIRA 15:11)

1. Permskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.
(Glycolic acid) (Hydrazides)



[illegible], SHLITSKAYA, N.D., VASSERMAN, T.V.

Intermolecular reactions and azeotropy in binary solutions.
Izv. SO AN SSSR no.3 Ser. khim. nauk no.1, [illegible]
(MIRA 18:8)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR i Novosibirskiy gosudarstvennyy universitet.

SHCHAPOVA, T.F.; SELITSKAYA, N.M.

Distribution of algae in the littoral of Moneron Island (Sea of Japan). Trudy Inst. okean. 23:112-124 '57. (MIRA 11:3)
(Moneron Island--Algae)

BABAYEVA, L.; PANKRATOVA, M.; YEVCHENKOVA, Ye.; SELITSKAYA, S.

Conservation of storage batteries at low temperatures. Avt.transp. 38 no.10:20-21 O '60. (MIRA 13:10)
(Motor vehicles--Batteries)

BABAYEVA, L.; SELITSKAYA, S.

Efficient storage of lead batteries. Avt. transp. 34 no.8: 12-13 Ag '56. (MLRA 9:10)

(Automobiles--Batteries)

SELITSKAYA, S.; YEVCHENKOVA, Ye.; MISLAVSKAYA, F.; SAKHAROVA, K.

Prolonging the life of lead storage batteries. Avt. transp. 34 no.10:16-18 O '56. (MLRA 9:12)

(Storage batteries)

AUTHOR: Selitskaya S.F., Engineer and Leont'eva, L.A., Engineer.

TITLE: Concerning the volt-ampere characteristics and charging conditions of lead, and nickel-iron accumulators. (O vol'tampernykh kharakteristikakh i zaryadnykh rezhimakh svintsovo-i zhelezonikelevykh akhumulyatornykh batarey.

110-6-20/24

PERIODICAL: "Vestnik Elektropromyshlennosti" (Journal of the Electrical Industry) 1957, Vol.28, No.6, pp.70-72 (U.S.S.R.)

ABSTRACT: In 1957, some motor trucks will be equipped with nickel-iron accumulators type 3 x 3 CЖH-70 in place of lead accumulators 2 x 3 CT-70. It is therefore of interest to compare the volt-ampere characteristic of lead and nickel-iron batteries and also to ascertain the best way of charging them on an automobile. An investigation was made into motor starting conditions, particularly at low temperatures. In making the tests allowance was made for the fact that in automobile service accumulators are charged discontinuously. The batteries were first partially discharged and then somewhat recharged after which starter tests were carried out. The results of the tests are given in Figs. 1 and 2. Fig. 1 shows that at low temperatures (-18 °C) if the

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accumulator is charged and discharged successively the power given out by a lead accumulator is practically independent of the state of discharge whilst that of a nickel-iron accumulator diminishes appreciably if the accumulator is partially discharged. At a temperature of 25 °C (Fig. 3) the power delivered by a lead accumulator that is discharged and partially charged in turn also depends less on the degree of discharge than in the case of nickel-iron accumulators. (Fig.4). The experimental data that was obtained may be used to state desirable charging conditions for lead and nickel-iron accumulators on automobiles. Recent investigations have shown that in modern lead accumulators with improved types of case, separators, and expanders for the negative electrodes undercharging of the battery does not lead to sulphating and other harmful consequences. However, lead accumulators can readily be damaged by overcharging. Therefore, the charging conditions for lead accumulators on automobiles should primarily be designed to protect them from gross overcharging.

Concerning the volt-ampere characteristics and charging conditions of lead, and nickel-iron accumulators. (Cont.) 110-6-20/24

Nickel-iron accumulators on the other hand are subject to damage by undercharging but overcharging does them hardly any harm. Automobile charging rates should be arranged accordingly.

There are 4 figures.

ASSOCIATION: Branch of NIAN (Filial NIAN).

SUBMITTED: September 21, 1956.

AVAILABLE:

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SELITSKAYA, S. F., Cand Tech Sci -- (diss) "Optimal conditions for the exploitation and preservation of automobile batteries." Moscow, 1959. 15 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Motor Vehicle and Road Inst, "Madi"); 150 copies; price not given; (KL, 17-60, 159)

SELITSKAYA S. F.

~~IVANOV, V. A.~~

5(4)

PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.
Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and O.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

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PANKRATOVA, M.I., inzh.; SHLITSKAYA, G.F., kand.tekhn.nauk

Increasing the capacity of an operational lead storage battery. Elektrotekhnika 36 no.2:22-24 F '65.

(MIRA 18:4)

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E091/E435

18.1285

AUTHORS: Lerinman, R.M., Shchegoleva, T.V., Kushakevich, S.A. and Selitskaya, S.I.

TITLE: Electron Microscopic Investigation of Structural Transformations in Titanium-Manganese and Titanium-Chromium Alloys

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 437-440 (USSR)

ABSTRACT: The transformation of the β-phase on tempering quenched Ti-Mn and Ti-Cr alloys were studied. The following binary alloys, containing elements which stabilize the β-phase, were used for the investigation: Ti-Mn (10.5% Mn) and Ti-Cr (9.4% Cr). The alloys were prepared from titanium sponge of TGO quality, manganese of MRl and chromium of KhO quality. Ingots were prepared by double vacuum melting. For the alloy containing Mn, the second fusion was carried out in argon. The composition of the alloys is shown in the table on p 438. The ingots were deformed by hot rolling and forging and the alloys were water quenched from 850°C (ie from the β-region). The time of heating prior to quenching was 30 minutes. Tempering was carried

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Electron Microscopic Investigation of Structural Transformations in Titanium-Manganese and Titanium-Chromium Alloys

out by soaking for 1 to 25 hours at 400 to 550°C and cooling in air. In order to reproduce the structures of the alloys, single-stepped angular prints (replicas) were prepared (Ref 10). The specimens were first chemically polished in anhydrous boiling ortho-phosphoric acid for 1 to 2 minutes. They were then etched in a mixture of 20% HF, 20% HNO_3 and 60% glycerin. The etching time varied from a few seconds to one minute. Apart from the electron microscopic investigation, hardness tests were made on a Rockwell machine with a diamond indenter, using a load of 150 kg. In Fig 1a, 1b and 1B, the microstructures of specimens of Ti-10.5% Mn alloys as tempered at 400°C for 1, 5 and 25 hours, respectively, are shown; in Fig 1g, 1d and 1e, those of similar specimens tempered at 550°C for 1, 10 and 25 hours, respectively. Fig 2 shows the microstructure of a Ti-9.4% Cr alloy (a - after quenching and tempering at 400°C for one hour; b - after quenching and tempering at 500°C for 25 hours). From the above microstructures

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it can be seen that an ω-phase appears in Ti-Cr and Ti-Mn alloys after quenching and tempering at 400°C. It has the shape of very finely dispersed platelets, 300-400 Å thick. Periodically, chains of equiaxed particles and individual equiaxed particles can be observed which point to the fact that the ω-phase has an equiaxed shape from the very moment of its formation.

Gratitude is expressed to Yu.A.Bagaryatskiy and V.I.Dobatkin for the discussion of the results of this work. There are 2 figures, 1 table and 10 references, 7 of which are English, 2 French and 1 Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: April 22, 1959

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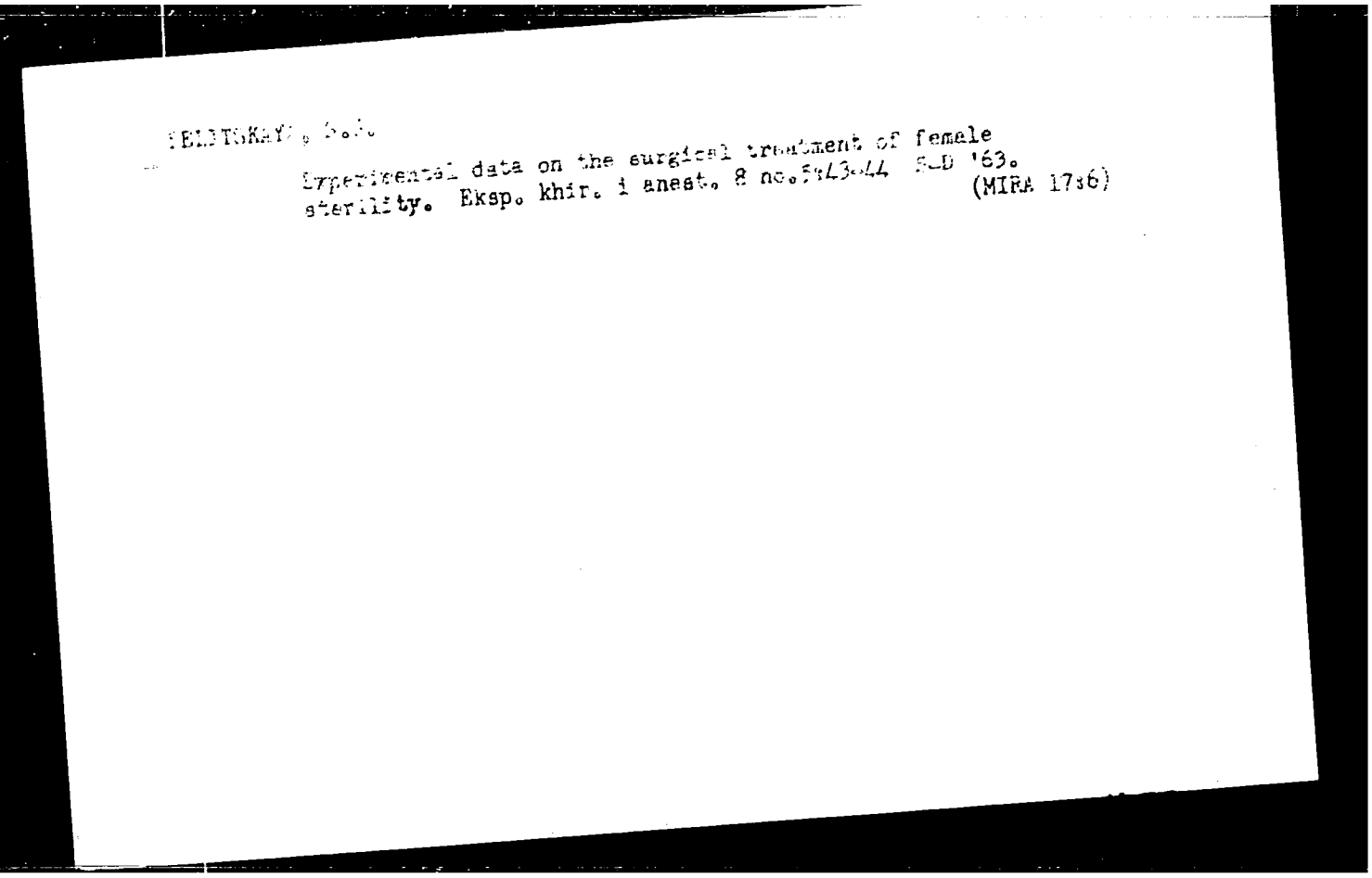

BELITSKAYA, L.I.

Experimental data on the surgical treatment of female sterility. Eksp. khir. i anest. 8 no.5:43-44 S-O '63. (MIRA 17:6)

SELITSKAYA, S. S.: Master Med Sci (diss) -- "The surgical treatment of inflammatory dieseases of the 'appendix uteri' (saccate formations)". Moscow, 1958. 7 pp (First Moscow Order of Lenin Med Inst im I. M. Sechenov), 200 copies

(KL, No 9, 1959, 113)

SELITSKAYA, S.S.

Surgical treatment of inflammatory (sacciform) diseases of the adnexa uteri [with summary in English]. Akush. i gin. 34 no.2:70-74 Mr-Ap '58. (MIRA 11:5)

1. Iz otdelniya operativnykh metodov lecheniya (zav. - prof. V.S. Frinovskiy) Nauchno-issledovatel'skogo instituta akusherstva i ginekologii (dir. L.G. Stepanov) Ministerstva zdravookhraneniya RSFSR.

(ADNEXA UTERI, dis.
sacciform inflammatory dis., surg. (Rus))

SELITSKAYA, S.S.; ZHELEZNOV, B.I., kand.med.nauk

Primary cancer of the fallopian tubes. Akush. i gin. 35 no.2:83-84 Mr-Ap '59. (MIRA 12:5)

1. Iz otdeleniya operativnoy ginekologii (zav. - prof. V.S. Frinovskiy) i patomorfologicheskoy laboratorii (zav. - prof. Ye.N.Petrova) Nauchno-issledovatel'skogo instituta akusherstva i ginekologii (dir. - dots. L.G.Stepanov) Ministerstva zdravookhraneniya RSFSR.

(FALLOPIAN TUBES, neoplasms
primary (Rus))

SELITSKAYA, T.I.

Result of dispensary treatment of glaucoma in Tomsk Province.
Sov.med. 22 no.11:84-86 N '58 (MIRA 11:11)

1. Iz kafedry glaznykh bolezney (zav. - prof. A.G. Svatikova) Tomskogo meditsinskogo instituta.

(GLAUCOMA, ther.
dispensary serv. (Rus))
(OUTPATIENT SERVICES,
for glaucoma (Rus))

VORONTSOV, P.A.; SELITSKAYA, V.I.

Sounding balloon methods for investigating the atmosphere. Trudy GGO no.51:3-16 '55. (MLRA 9:8)
(Balloons, Sounding)
(Meteorological instruments)

VORONTSOV, P.A.; SELITSKAYA, V.I.

Vertical structure of summer fogs in the region of Dikson Island. Trudy AANII 228:87-99 '59. (MIRA 13:2)
(Dickson Island--Fog)

SELITSKAYA, V.I.

Diurnal and annual variation of meteorological elements in the lower layer of the atmosphere 0.5 km. above the village of Voyeykovo. Trudy GGO no.135:26-34 '62. (MIRA 15:8)
(Voyeykovo region (Leningrad Province)--Meteorology--Observations)

VORONTSOV, P.A.; SELITSKAYA, V.I.

Use of helicopters in sounding the lower atmospheric layers. Trudy GGO no.140:3-16 '63.

Methodology of atmospheric sounding by means of helicopters. Ibid.:17-64 (MIRA 16:12)

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ACCESSION NR: AT4043161

AUTHOR: Helitskaya, V. I.

TITLE: Comparison of temperature and humidity measurements made in the 1.5-km atmospheric layer using a helicopter-borne mechanical meteorograph and an A-22-IV radiosonde

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, no. 154. Voprosy* fiziki atmosfery* (Problems in atmospheric physics), 85-89

TOPIC TAGS: meteorological parameter, meteorograph, airborne meteorograph, radiosonde, A 22 IV radiosonde, atmospheric temperature, atmospheric humidity, air temperature measurement accuracy, atmospheric pressure measurement accuracy

ABSTRACT: In 1962 the Glavanya geofizicheskaya observatoriya (Main Geophysical Observatory) conducted a study of the comparative accuracy of air temperature and humidity measurements made in the 1.5-km layer using a helicopter-borne meteorograph and an A-22-IV radiosonde. The A-22-IV radiosonde had better receivers, humidity sensors, and overall design than the Molchanov RZ-048 radiosonde, which had been used previously and had proved completely unsuitable for the purpose. Nineteen "simultaneous" ascents were made, i.e., the time and place of helicopter and radiosonde ascent were not more than 30 min and 300 m

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